

KI-20 IMPLANT

manual



saeyang

You have required to read this manual carefully before operating this machine.

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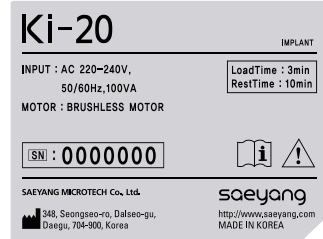
1. Overview

1-1. Indication

- Ki-20 is made for Implant surgery. It's only for used by dental specialist.
Before operating this machine, read manual carefully.

1-2. Classification

- Protection grade for electric shock
: Class I
- Protection level for flooding
: Foot switch(Ki-F20) / IPX8
- Equipment not suitable for use in the presence of
a flammable anaesthetic mixture with air or oxygen
or nitrous oxide.



Caution

Before operating, read this manual carefully.

2. Precaution

Danger

- The system may be subject to malfunction when used in the presence of electromagnetic interference.
- Do not locate the system in the vicinity of other devices that possibly emit electromagnetic interference.

Warning

- Ki-20 is designed for use by dental professionals only.
- Special care must be taken to maintain patient safety while in use.
- Read this user's manual thoroughly and understand functions of individual components completely before use.
- Make sure the product is in good working condition prior to use. If there is no any abnormal condition, continue to use the product.
- Before using the product, the test run must be performed to check if the product is working normally.
- If there is any abnormal condition, including excessive vibration, noise and heat while using the product, immediately turn off the power to stop using and contact your local dealer for repair.
- To prevent personal injury or product damage, it is required to check if the motor handpiece has been turned off before changing the file.
- Violent shocks, such as dropping the product, may cause product damage.
- Do not disassemble the motor handpiece.
- Before cleaning the product, be sure to turn off the power and then wipe the motor handpiece with a dry cloth.
- Do not use any organic solvent to clean motor handpiece and control box.
- Transport and storage conditions
The product must be transported and stored at temperature of -20°C~40°C, atmosphere pressure of 700~1060 HPa, and humidity of 0~90%. If the conditions are not satisfied, the product may not work normally.

Caution

- For the follow up service and spare parts, please contact your local dealer.
- Ensure that the product is not exposed to dust, sulfur or salt.
- Use the recommended files only.

3. Components

3-1. Component Parts



①	Power cord	②	Control box(Ki-20)	③	Irrigation tube
④	Y-tube	⑤	Tube holder	⑥	Coolant hanger
⑦	Foot switch(Ki-F20)	⑧	Handpiece stand	⑨	E-type motor & Motor cord
⑩	Foot hanger				

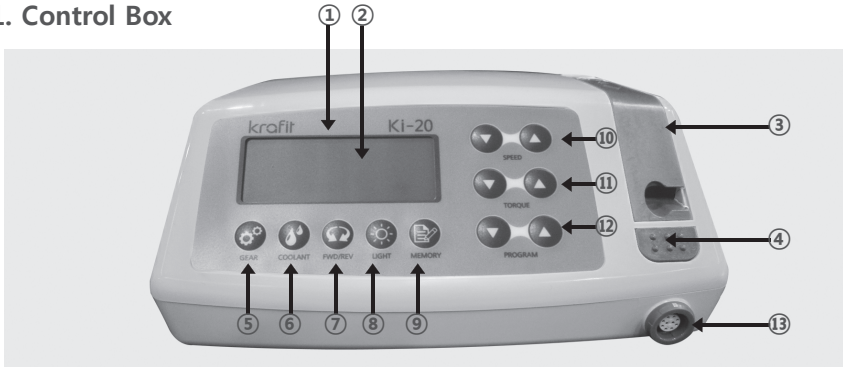
3-2. Component Assembly



※ Coolant is not included.

4. Part Introduction

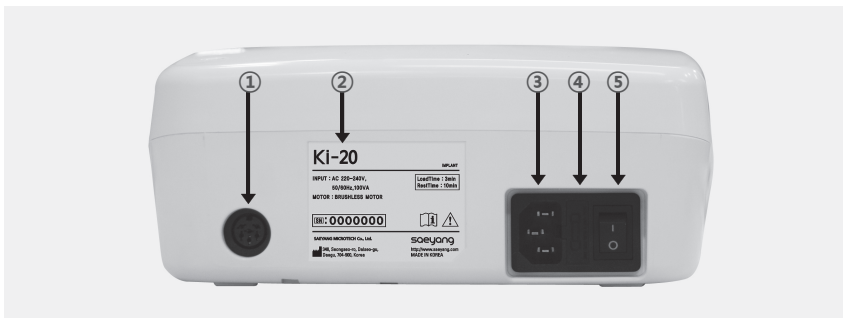
4-1. Control Box



- ① Display panel
- ② LCD – Information
- ③ Rotation holder – Irrigation tube
- ④ PUSH button – Rotation holder open/close
- ⑤ GEAR RATIO button
- ⑥ COOLANT button
- ⑦ FORWARD / REVERSE button
- ⑧ OPTIC button
- ⑨ MEMORY button
- ⑩ SPEED ⏮ ⏭ button
- ⑪ TORQUE ⏮ ⏭ button
- ⑫ PROGRAM ⏮ ⏭ button
- ⑬ Motor connector

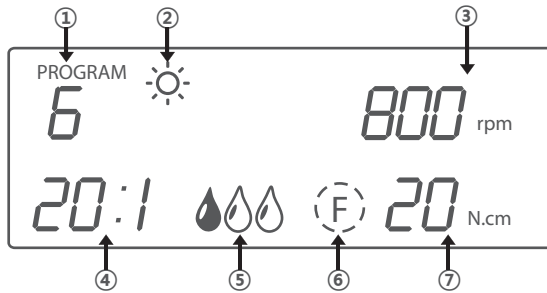
※ All these button can be operated without getting on foot switch except coolant button and light button.

4-2. Back Side of Control Box



- ① Foot switch connector
- ② Label – Specification
- ③ Power cord connector
- ④ Fuse box
- ⑤ Power switch (on/off)

4-3. LCD



- ① Program : Total 9 programs
- Program memory : Optic(on/off), Rpm, Gear ratio, Coolant, F/R, Torque
- ② Optic (on/off)
- ③ Rpm : 20~80000 rpm

1 : 1	1 : 2	20 : 1	32 : 1
600~40000	1200~80000	30~2000	20~1200

- ④ Gear ratio – 1:1, 1:2, 20:1, 32:1 Total 4 Gear ratio

- ⑤ Coolant : Total 4 steps (off/1step/2step/3step)

50ml/min	75ml/min	90ml/min

- ⑥ Forward/Reverse : Forward (F), Reverse (R)
- Forward : Blinks when the motor operates.
- Reverse : Blinks when setting, when the operates beep sound and blinks (2-second intervals 2 times) occurs.

- ⑦ Torque

20 : 1	32 : 1	1 : 1 / 1 : 2
5~70 Ncm	5~90 Ncm	No torque setting

- ⑧ When an error occurs, displayed on the screen.

Err 01	When micro motor has not connected.
Err 02	When foot switch has not connected.
Err 03	When the temperature of inside the transformer is overheated.
Err 04	When overload of coolant motor occurs.



Caution

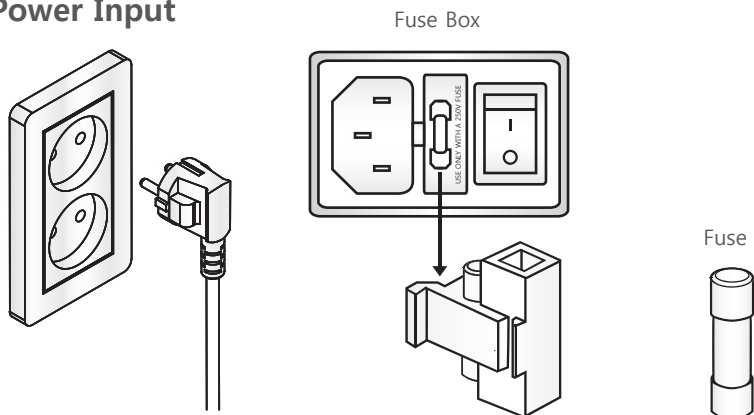
Special care must always be taken when handling the LCD panel.

4-4. Foot Switch



- ① Foot hanger
- ② Coolant button (4 steps)
- ③ Program change button (9 Programs)
- ④ F/R change button – For the direction change
- ⑤ Foot switch – Micro motor speed control
- ⑥ Foot switch connector

5. Main Power Input



- ① AC220~240V, 50/60Hz or AC100~120V, 50/60Hz)
- ② 2.0AL (220~240V) or 3.15AL(100~120V)



Caution

1. To avoid electric shock, do not plug or unplug the power cord with wet hands.
2. The unit must be connected to the power with a suitable earth ground.

6. How to install

Caution

1. The control box must be installed on a flat surface substantially uninterfered with by peripheral devices. Avoid ventilation on the bottom plate of the control box being blocked off.
2. The control box must be used in a place where indoor temperature is maintained at a proper level (0~40°C).
3. Do not use the unit in a dirty or very hot and humid place.

6-1. Connection



Motor Cord Connection

- A motor cord connector is required to be well connected well with a port in front of a control box by checking right connection direction, pushing it to the end until click-sound correctly.



Foot Switch Connection

- Foot switch cord connector is required to be well connected with a port of foot switch connect in the rear of a control box.



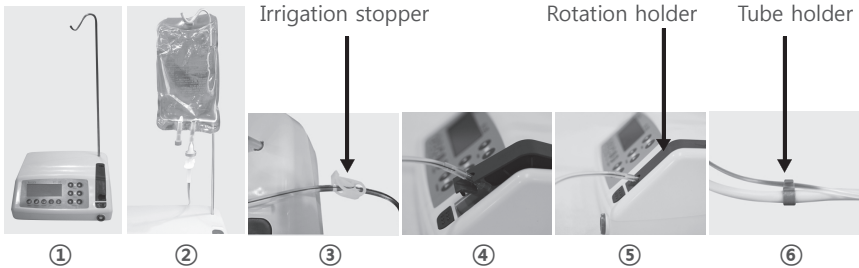
Power Cord Connection

- Power cord connection is required to be well connected with a port of power connector in the rear of a control box.

Caution

- The power cord plug must be connected to the power outlet only after making sure that all the cords have been connected properly and safely.

6-2. Irrigation Tube Assembling



- ① Put hanger.
- ② Put a coolant downward.
- ③ Turn off irrigation stopper.
- ④ Put water tube well.
- ⑤ Close a pump cover by pushing rotation holder.
- ⑥ Organize a motor cord and an irrigation tube well through tube holders.



Caution

- If the pump operates while the tube is bent or the water does not come out, the tube may be broken or damaged.

6-3. Foot Switch Assembling



- Assemble a foot hanger well by pushing it well into the holes on the right and left sides.

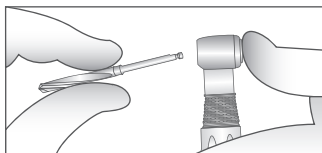
6-4. Handpiece Connection



Contra angle and E-type motor assembling

⚠ Caution

1. Please turn the power off beforehand, when assembling and disassembling the implant angle.
2. Make sure that the implant angle is surely connected to the motor before operation.



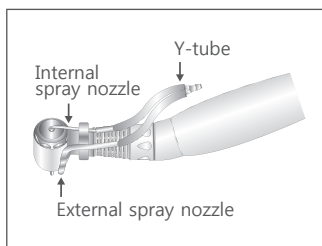
File insertion and removal

① Insertion

While pressing the button, insert the file into the hole of the contra head part and try to move round the file softly with a slight press.

② Removal

While pushing the button, pull out the file.



Connection Y-tube & Nozzle clamp

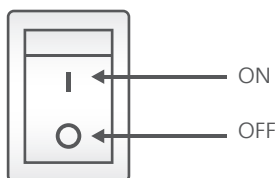
- ① The internal and external irrigation is available with internal spray nozzle and Y-tube.
- ② Please connect each part as the picture according to the using bur and surgery type.
- ③ If the user presses the button or opens the lever with the internal nozzle inserted, the nozzle may be damaged during the bur change.

7. Operation

7-1. Operation by Hand

- ① Check power connector.
- ② Check motor cord and handpiece connector.
- ③ Turn on the control box.

Power Switch



7-2. Operation by Foot

Same as above operation by hand. And then, step on a foot switch.

7-3. Setting




Gear ratio Change



1 : 1 → 1 : 2 → 20 : 1 → 32 : 1

Coolant Change



Off →  →  → 

Forward / Reverse Change



Optic Change



Optic LED on & off

Memory Change



Save 9 programs.



Setting torque, speed and so on.



Press memory button for 2 seconds.

Torque Change





Torque can be adjusted by pushing buttons of  .

Gear ratio	Range(torque)	Variation(torque)	Remark
20 : 1	5~70	5	
32 : 1	5~90	5	

- In overload case, "88" signal will be appeared on torque sector.
- After five seconds, motor will be stopped.

Program Change



Program can be memorized up to 9 programs and it can be revised by pushing buttons of  .

Speed Change



Speed can be adjusted by pushing buttons of  .




Gear ratio	Range(rpm)	Section(rpm)	Variation(rpm)	Remark
1 : 1	600~400	600~1,000	100	
		1,000~5,000	500	
		5,000~40,000	1,000	
1 : 2	1,200~80,000	1,200~2,000	200	
		2,000~10,000	1,000	
		10,000~80,000	2,000	
20 : 1	30~2,000	30~50	5	
		50~250	25	
		250~2,000	50	
32 : 1	20~1,250	20~100	5	
		100~500	20	
		500~1,000	50	
		1,000~1,200	100	

7-4. Setting - Foot Switch

Coolant Change



Coolant rate.

Off →  →  → 

Program Change



Press the button one time : Change to the next prog.

Press the button longer(more than 2 seconds) : Change to the before prog.

Forward / Reverse Change



Change direction by F/R button.

- Reverse, beep sound every 2 seconds.

Speed Change



Increase or decrease speed by foot switch.

**Caution**

1. Please confirm stop of handpiece operation before turn off the control box.
2. Please pull out power cord of the control box in long term.

8. Error Message

- The alarm will go off three times with following error code, when error occurred.

Error code	Status	Cause	Countermeasure
" Err 01 "	Motor cable error	Pull out of motor cord.	Plug in motor cord correctly.
		Disconnection of motor cord.	Replacement of motor cord.
" Err 02 "	Foot switch cable error	Pull out of foot switch cord.	Plug in foot switch cord.
		Disconnection of foot switch cord.	Replacement of foot switch cord.
" Err 03 "	Transformer and heat error	Hard work for a long time.	Stop to use and cooling down the control box.
		In closed and high temperature place.	Use the control box in recommended place.
		Break down in inside temperature sensor.	Contact professional technician.
" Err 04 "	Overload of coolant motor	Not good connection of coolant tube.	Check tube status.
		Problems of coolant parts.	Contact professional technician

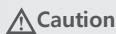
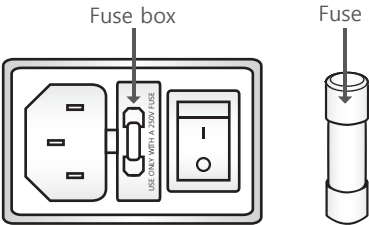
9. Troubleshooting

Symptom	Check point	Countermeasure
Not working of LCD display	Plug status.	Plug in motor cord correctly.
	Fuse status.	Replacement of fuse.
	Power switch status.	Contact professional technician.
Not working of foot switch	Foot switch status.	Plug in foot switch correctly.
Heat problem	Trouble of ball bearing.	Contact professional technician.
Strong vibration & noise	Stained with foreign substance.	Clean the handpiece.
	Trouble of ball bearing.	Contact professional technician.

10. Maintenance

10-1. Fuse Replacement

- Check the fuse in case the power switch failed.
- Pull out the fuse box located on the back of control box when you check the fuse.



Caution

Be sure to turn the power off and unplug the unit before replacing the fuse.

10-2. Maintenance for Control Box & Foot Switch

- Clean the control box or foot switch with alcohol after unplug.

10-3. Maintenance for Handpiece

- When cleaning the handpiece, put the head part into the water and repeat the operation and stop for 4-5 times.
- Dry it all after cleaning.
- Do not put the whole handpiece into water.

10-4. Sterilization

- We recommend an autoclave sterilization with high-pressure.
- Please, sterilize below items.

Contra angle/ E-type motor with motor cord



Caution

Please, Do not sterilize with high-pressure control box, foot switch, ac power cord.

Autoclaving

- Remove foreign body from a handpiece.
- Put the autoclaving plug into micromotor.
- Put the handpiece into sterilizer.

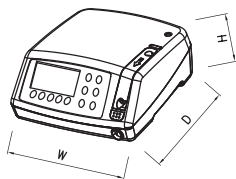


Caution

1. Remove foreign body from a handpiece.
2. Do not plug out the motor cord from a handpiece.

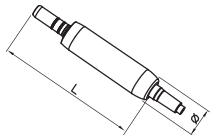
11. Specification

Control Box



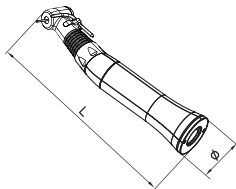
Model	Ki-20
Power(Input)	AC 100~120V , 50/60Hz /AC 220~240V , 50/60Hz
Output	100VA
Weight	2,606g
Dimension	240(W)X225(D)X97(H)

E-Type Motor & Motor Cord



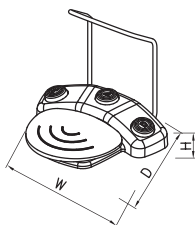
Model	Ki-MTO
Weight	265g
Dimension	117(L), Ø22
Reduction gear	28VDC / 40,000 RPM
Autoclaving	135°C

Contra Angle



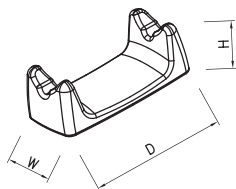
Model	Ki-AG20
Weight	83g
Dimension	97(L)
Reduction gear	20:1
Autoclaving	135°C
Angle Diameter	Ø20

Foot Switch



Model	Ki-F20
Weight	1,015g
Dimension	218(W)X190(D)X57(H)
Height including a coolant bar	165mm

Handpiece Stand



Weight	101g
Dimension	60(W)X130(D)X47(H)

12. Disposal

- If you have any inquiries, please contact a sales office you bought.

13. Warranty

- We do not guarantee the quality in case of user's carelessness.

memo

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